

WHAT IS CLAIMED IS:

1. A device for dispensing a product, comprising:
 - a container;
 - a flexible-walled pouch inside the container, the flexible-walled pouch comprising an interior;
 - a product contained in the interior of the pouch;
 - a dip tube extending in the interior of the pouch, the dip tube having a free end located substantially at a mid-point of an axial height of the pouch;
 - an airless pump in fluid communication with the interior of the flexible-walled pouch via the dip tube; and
 - at least one passage configured to allow air entry into the container and outside of the pouch,
 - wherein pressure in the interior of the pouch, at least prior to first use of the device, is less than or substantially equal to atmospheric pressure.
2. The device of claim 1, wherein the passage is configured to allow the air entry as the product is pumped from the pouch.
3. The device of claim 1, wherein said pouch is fixed longitudinally to an interior of the container along at least one fixing region.
4. The device of claim 3, wherein the device is configured so that, as product is pumped from the interior of the pouch, a volume defined by the pouch above the free end of the dip tube remains substantially equal to a volume defined by the pouch below the free end of the dip tube.
5. The device of claim 3, wherein the pouch and the at least one fixing region are configured so that as product is pumped from inside the interior of the pouch, a volume

defined by the pouch decreases while cross sections of the pouch located along at least a portion of its axial height remain substantially symmetrical with respect to a mid cross sectional plane containing the free end of the dip tube.

6. The device of claim 5, wherein the device is configured so that as the product is pumped from the interior of the pouch, cross sections of the pouch located along said at least a portion of its axial height maintain a substantially symmetric shape with respect to an axis containing the dip tube.

7. The device of claim 1, wherein the pouch is configured to move from a first position, wherein the pouch defines a maximum volume, to a second position, wherein the pouch defines a minimum volume.

8. The device of claim 7, wherein said pouch, when in the second position, is close to the dip tube along at least one longitudinal region.

9. The device of claim 7, wherein said pouch, when in the second position, contacts the dip tube along at least one longitudinal position.

10. The device of claim 7, wherein an internal cross shape defined by the container is similar to a shape of the pouch when the pouch is in the first position.

11. The device of claim 3, wherein the at least one fixing region comprises a plurality of fixing regions, and

wherein the pouch and the plurality of fixing regions are configured so that a profile of a portion of the pouch extending between two adjacent fixing regions deforms substantially symmetrically with respect to a plane passing through an axis of the dip tube and a midpoint between the two adjacent fixing regions.

12. The device of claim 3, wherein the at least one fixing region extends continuously along substantially the entire height of the pouch.

13. The device of claim 7, wherein cross sections of the pouch have a symmetric shape about an axis.

14. The device of claim 13, wherein the pouch has at least four sides when the pouch is in the first position.

15. The device of claim 14, wherein the pouch is fixed to the container along N longitudinal fixing regions.

16. The device of claim 15, wherein N is greater than or equal to three.

17. The device of claim 13, wherein when the pouch is in the first position, the pouch has a square shaped cross section having four sides with a longitudinal fixing region being located at the middle of each of the four sides.

18. The device of claim 13, wherein when the pouch is in the first position, the pouch has a hexagonal shaped cross section with a longitudinal fixing region located at every other corner of said cross section.

19. The device of claim 1, wherein a cross sectional area defined by the pouch is at a maximum substantially at the mid-point of the axial height and decreases gradually away from the midpoint.

20. The device of claim 1, wherein the at least one passage comprises one or more orifices formed in a bottom of the external container.

21. The device of claim 20, wherein the orifices comprise slots.

22. The device of claim 1, wherein the device is formed by co-extrusion of a first material forming the container and a second material forming the pouch, the first material being physically and chemically incompatible with the second material.

23. The device of claim 22, wherein the pouch is fixed longitudinally to an interior of the container along at least one fixing region, and wherein the at least one fixing region

comprises a third material that is physically and chemically compatible with said first material and second material.

24. The device of claim 23, wherein the third material comprises a thermoplastic.

25. The device of claim 22, wherein the first material is chosen from polyethylene terephthalates, ABSs, and styrenes.

26. The device of claim 22, wherein the second material is chosen from polypropylenes and polyethylenes.

27. The device of claim 23, wherein the third material is a resin chosen from ADMER grade SF 600, ADMER grade SE 800, ADMER grade SF 620E, LOTADER grade TX8030, and LOTADER grade HX8020.

28. The device of claim 1, wherein the pump is mounted on the device by at least one of crimping and screwing.

29. The device of claim 1, further comprising a dispensing head for actuating the pump and dispensing product via at least one dispensing orifice.

30. The device of claim 1, wherein the product comprises a cosmetic product.

31. The device of claim 30, wherein the cosmetic product is chosen from personal hygiene products, scents, makeup products, hair products, care products, and sunscreens.

32. The device of claim 1, wherein the pouch is formed of a substantially non-elastic material.

33. The device of claim 32, wherein the material is deformable.

34. A device for dispensing a product, comprising:

a container;

a flexible-walled pouch inside the container, the flexible-walled pouch comprising an interior configured to contain the product;

a dip tube extending in the interior of the pouch, the dip tube having a free end located substantially at a mid-point of an axial height of the pouch;

an airless pump in fluid communication with the interior of the flexible-walled pouch via the dip tube; and

at least one passage configured to allow air entry into the container and outside of the pouch,

wherein the flexible pouch comprises a substantially non-elastically deformable material.

35. The device of claim 34, wherein the passage is configured to allow the air entry as the product is pumped from the pouch.

36. The device of claim 34, wherein said pouch is fixed longitudinally to an interior of the container along at least one fixing region.

37. The device of claim 35, wherein the pouch and the at least one fixing region are configured so that, as product is pumped from the interior of the pouch, a volume defined by the pouch above the free end of the dip tube remains substantially equal to a volume defined by the pouch below the free end of the dip tube.

38. The device of claim 36, wherein the pouch and the at least one fixing region are configured so that as product is pumped from inside the interior of the pouch, a volume defined by the pouch decreases while cross sections of the pouch located along at least a portion of its axial height remain substantially symmetrical with respect to a mid cross sectional plane containing the free end of the dip tube.

39. The device of claim 38, wherein the pouch and the at least one fixing region are configured so that as the product is pumped from the interior of the pouch, cross

sections of the pouch located along said at least a portion of its axial height maintain a substantially symmetric shape with respect to an axis containing the dip tube.

40. The device of claim 34, wherein the pouch is configured to move from a first position, wherein the pouch defines a maximum volume, to a second position, wherein the pouch defines a minimum volume.

41. The device of claim 40, wherein said pouch, when in the second position, is close to the dip tube along at least one longitudinal region.

42. The device of claim 40, wherein said pouch, when in the second position, contacts the dip tube along at least one longitudinal position.

43. The device of claim 40, wherein an internal cross shape defined by the container is similar to a shape of the pouch when the pouch is in the first position.

44. The device of claim 34, wherein the at least one fixing region comprises a plurality of fixing regions, and

wherein the pouch and the plurality of fixing regions are configured so that a profile of a portion of the pouch extending between two adjacent fixing regions deforms substantially symmetrically with respect to a plane passing through an axis of the dip tube and a midpoint between the two adjacent fixing regions.

45. The device of claim 34, wherein the at least one fixing region extends continuously along substantially the entire height of the pouch.

46. The device of claim 40, wherein cross sections of the pouch have a symmetric shape about an axis.

47. The device of claim 46, wherein the pouch has at least four sides when the pouch is in the first position.

48. The device of claim 47, wherein the pouch is fixed to the container along N longitudinal fixing regions.

49. The device of claim 48, wherein N is greater than or equal to three.

50. The device of claim 46, wherein when the pouch is in the first position, the pouch has a square shaped cross section having four sides with a longitudinal fixing region being located at the middle of each of the four sides.

51. The device of claim 46, wherein when the pouch is in the first position, the pouch has a hexagonal shaped cross section with a longitudinal fixing region located at every other corner of said cross section.

52. The device of claim 34, wherein a cross sectional area defined by the pouch is at a maximum substantially at the mid-point of the axial height and decreases gradually away from the midpoint.

53. The device of claim 34, wherein the at least one passage comprises one or more orifices formed in a bottom of the external container.

54. The device of claim 53, wherein the orifices comprise slots.

55. The device of claim 34, wherein the device is formed by co-extrusion of a first material forming the container and a second material forming the pouch, the first material being physically and chemically incompatible with the second material.

56. The device of claim 55, wherein the pouch is fixed longitudinally to an interior of the container along at least one fixing region, and wherein the at least one fixing region comprises a third material that is physically and chemically compatible with said first material and second material.

57. The device of claim 56, wherein the third material comprises a thermoplastic.

58. The device of claim 55, wherein the first material is chosen from polyethylene terephthalates, ABSs, and styrenes.

59. The device of claim 55, wherein the second material is chosen from polypropylenes and polyethylenes.

60. The device of claim 56, wherein the third material is a resin chosen from ADMER grade SF 600, ADMER grade SE 800, ADMER grade SF 620E, LOTADER grade TX8030, and LOTADER grade HX8020.

61. The device of claim 34, wherein the pump is mounted on the device by at least one of crimping and screwing.

62. The device of claim 34, further comprising a dispensing head for actuating the pump and dispensing product via at least one dispensing orifice.

63. The device of claim 34, further comprising product contained in the interior of the pouch, wherein the product comprises a cosmetic product.

64. The device of claim 63, wherein the cosmetic product is chosen from personal hygiene products, scents, makeup products, hair products, care products, and sunscreens.

65. A device for dispensing a product, comprising:

a container;

a flexible-walled pouch inside the container, the flexible-walled pouch comprising an interior configured to contain the product;

a dip tube extending in the interior of the pouch, the dip tube having a free end located substantially at a mid-point of an axial height of the pouch;

an airless pump in fluid communication with the interior of the flexible-walled pouch via the dip tube; and

at least one passage configured to allow air entry into the container and outside of the pouch,

wherein said pouch is fixed longitudinally to an interior wall of the container along at least one fixing region.

66. The device of claim 65, wherein the passage is configured to allow the air entry as the product is pumped from the pouch.

67. The device of claim 65, wherein the pouch and the at least one fixing region are configured so that, as product is pumped from the interior of the pouch, a volume defined by the pouch above the free end of the dip tube remains substantially equal to a volume defined by the pouch below the free end of the dip tube.

68. The device of claim 65, wherein the pouch and the at least one fixing region are configured so that as product is pumped from inside the interior of the pouch, a volume defined by the pouch decreases while cross sections of the pouch located along at least a portion of its axial height remain substantially symmetrical with respect to a mid cross sectional plane containing the free end of the dip tube.

69. The device of claim 68, wherein the pouch and the at least one fixing region are configured so that as the product is pumped from the interior of the pouch, cross sections of the pouch located along said at least a portion of its axial height maintain a substantially symmetric shape with respect to an axis containing the dip tube.

70. The device of claim 65, wherein the pouch is configured to move from a first position, wherein the pouch defines a maximum volume, to a second position, wherein the pouch defines a minimum volume.

71. The device of claim 70, wherein said pouch, when in the second position, is close to the dip tube along at least one longitudinal region.

72. The device of claim 70, wherein said pouch, when in the second position, contacts the dip tube along at least one longitudinal position.

73. The device of claim 70, wherein an internal cross shape defined by the container is similar to a shape of the pouch when the pouch is in the first position.

74. The device of claim 65, wherein the at least one fixing region comprises a plurality of fixing regions, and

wherein the pouch and the plurality of fixing regions are configured so that a profile of a portion of the pouch extending between two adjacent fixing regions deforms substantially symmetrically with respect to a plane passing through an axis of the dip tube and a midpoint between the two adjacent fixing regions.

75. The device of claim 65, wherein the at least one fixing region extends continuously along substantially the entire height of the pouch.

76. The device of claim 70, wherein cross sections of the pouch have a symmetric shape about an axis.

77. The device of claim 76, wherein the pouch has at least four sides when the pouch is in the first position.

78. The device of claim 77, wherein the pouch is fixed to the container along N longitudinal fixing regions.

79. The device of claim 78, wherein N is greater than or equal to three.

80. The device of claim 70, wherein when the pouch is in the first position, the pouch has a square shaped cross section having four sides with a longitudinal fixing region being located at the middle of each of the four sides.

81. The device of claim 76, wherein when the pouch is in the first position, the pouch has a hexagonal shaped cross section with a longitudinal fixing region located at every other corner of said cross section.

82. The device of claim 65, wherein a cross sectional area defined by the pouch is at a maximum substantially at the mid-point of the axial height and decreases gradually away from the midpoint.

83. The device of claim 65, wherein the at least one passage comprises one or more orifices formed in a bottom of the external container.

84. The device of claim 83, wherein the orifices comprise slots.

85. The device of claim 65, wherein the device is formed by co-extrusion of a first material forming the container and a second material forming the pouch, the first material being physically and chemically incompatible with the second material.

86. The device of claim 85, wherein the pouch is fixed longitudinally to an interior of the container along at least one fixing region, and wherein the at least one fixing region comprises a third material that is physically and chemically compatible with said first material and second material.

87. The device of claim 86, wherein the third material comprises a thermoplastic.

88. The device of claim 85, wherein the first material is chosen from polyethylene terephthalates, ABSs, and styrenes.

89. The device of claim 85, wherein the second material is chosen from polypropylenes and polyethylenes.

90. The device of claim 86, wherein the third material is a resin chosen from ADMER grade SF 600, ADMER grade SE 800, ADMER grade SF 620E, LOTADER grade TX8030, and LOTADER grade HX8020.

91. The device of claim 65, wherein the pump is mounted on the device by at least one of crimping and screwing.

92. The device of claim 65, further comprising a dispensing head for actuating the pump and dispensing product via at least one dispensing orifice.

93. The device of claim 65, further comprising product contained in the interior of the pouch, wherein the product comprises a cosmetic product.

94. The device of claim 93, wherein the cosmetic product is chosen from personal hygiene products, scents, makeup products, hair products, care products, and sunscreens.

95. The device of claim 65, wherein the pouch is formed of a substantially non-elastic material.

96. The device of claim 95, wherein the material is deformable.

97. A device for dispensing a product, comprising:

a container;

a flexible-walled pouch inside the container, the flexible-walled pouch comprising an interior;

a product contained in the interior of the pouch;

a dip tube extending in the interior of the pouch;

an airless pump in fluid communication with the interior of the flexible-walled pouch via the dip tube; and

at least one passage configured to allow air entry into the container and outside of the pouch,

wherein pressure in the interior of the pouch, at least prior to first use of the device, is less than or substantially equal to atmospheric pressure, and

wherein the device is configured so that substantially all of the product contained in the pouch is dispensed via the airless pump regardless of whether the device is oriented in a head-up position or a head-down position.

98. The device of claim 97, wherein the passage is configured to allow the air entry as the product is pumped from the pouch.

99. The device of claim 97, wherein said pouch is fixed longitudinally to an interior of the container along at least one fixing region.

100. The device of claim 97, wherein the device is configured so that, as product is pumped from the interior of the pouch, a volume defined by the pouch above the free end of the dip tube remains substantially equal to a volume defined by the pouch below the free end of the dip tube.

101. The device of claim 97, wherein the device is configured so that as product is pumped from inside the interior of the pouch, a volume defined by the pouch decreases while cross sections of the pouch located along at least a portion of its axial height remain substantially symmetrical with respect to a mid cross sectional plane containing the free end of the dip tube.

102. The device of claim 101, wherein the device is configured so that as the product is pumped from the interior of the pouch, cross sections of the pouch located along said at least a portion of its axial height maintain a substantially symmetric shape with respect to an axis containing the dip tube.

103. The device of claim 97, wherein the pouch is configured to move from a first position, wherein the pouch defines a maximum volume, to a second position, wherein the pouch defines a minimum volume.

104. The device of claim 103, wherein said pouch, when in the second position, is close to the dip tube along at least one longitudinal region.

105. The device of claim 103, wherein said pouch, when in the second position, contacts the dip tube along at least one longitudinal position.

106. The device of claim 103, wherein an internal cross shape defined by the container is similar to a shape of the pouch when the pouch is in the first position.

107. The device of claim 99, wherein the at least one fixing region comprises a plurality of fixing regions, and

wherein the pouch and the plurality of fixing regions are configured so that a profile of a portion of the pouch extending between two adjacent fixing regions deforms substantially symmetrically with respect to a plane passing through an axis of the dip tube and a midpoint between the two adjacent fixing regions.

108. The device of claim 99, wherein the at least one fixing region extends continuously along substantially the entire height of the pouch.

109. The device of claim 103, wherein cross sections of the pouch have a symmetric shape about an axis.

110. The device of claim 109, wherein the pouch has at least four sides when the pouch is in the first position.

111. The device of claim 110, wherein the pouch is fixed to the container along N longitudinal fixing regions.

112. The device of claim 111, wherein N is greater than or equal to three.

113. The device of claim 109, wherein when the pouch is in the first position, the pouch has a square shaped cross section having four sides with a longitudinal fixing region being located at the middle of each of the four sides.

114. The device of claim 109, wherein when the pouch is in the first position, the pouch has a hexagonal shaped cross section with a longitudinal fixing region located at every other corner of said cross section.

115. The device of claim 97, wherein a cross sectional area defined by the pouch is at a maximum substantially at a mid-point of the axial height and decreases gradually away from the midpoint.

116. The device of claim 97, wherein the at least one passage comprises one or more orifices formed in a bottom of the external container.

117. The device of claim 116, wherein the orifices comprise slots.

118. The device of claim 97, wherein the device is formed by co-extrusion of a first material forming the container and a second material forming the pouch, the first material being physically and chemically incompatible with the second material.

119. The device of claim 118, wherein the pouch is fixed longitudinally to an interior of the container along at least one fixing region, and wherein the at least one fixing region comprises a third material that is physically and chemically compatible with said first material and second material.

120. The device of claim 119, wherein the third material comprises a thermoplastic.

121. The device of claim 118, wherein the first material is chosen from polyethylene terephthalates, ABSs, and styrenes.

122. The device of claim 118, wherein the second material is chosen from polypropylenes and polyethylenes.

123. The device of claim 119, wherein the third material is a resin chosen from ADMER grade SF 600, ADMER grade SE 800, ADMER grade SF 620E, LOTADER grade TX8030, and LOTADER grade HX8020.

124. The device of claim 97, wherein the pump is mounted on the device by at least one of crimping and screwing.

125. The device of claim 97, further comprising a dispensing head for actuating the pump and dispensing product via at least one dispensing orifice.

126. The device of claim 97, further comprising product contained in the interior of the pouch, wherein the product comprises a cosmetic product.

127. The device of claim 126, wherein the cosmetic product is chosen from personal hygiene products, scents, makeup products, hair products, care products, and sunscreens.

128. The device of claim 97, wherein the pouch is formed of a substantially non-elastic material.

129. The device of claim 128, wherein the material is deformable.

130. A device for dispensing a product, comprising:

a container;

a flexible-walled pouch inside the container, the flexible-walled pouch comprising an interior configured to contain the product;

a dip tube extending in the interior of the pouch;

an airless pump in fluid communication with the interior of the flexible-walled pouch via the dip tube; and

at least one passage configured to allow air entry into the container and outside of the pouch,

wherein the flexible pouch comprises a substantially non-elastically deformable material, and

wherein the device is configured so that substantially all of the product contained in the pouch is dispensed via the airless pump regardless of whether the device is oriented in a head-up position or a head-down position.

131. The device of claim 130, wherein the passage is configured to allow the air entry as the product is pumped from the pouch.

132. The device of claim 130, wherein said pouch is fixed longitudinally to an interior of the container along at least one fixing region.

133. The device of claim 130, wherein the device is configured so that, as product is pumped from the interior of the pouch, a volume defined by the pouch above the free end of the dip tube remains substantially equal to a volume defined by the pouch below the free end of the dip tube.

134. The device of claim 130, wherein the device is configured so that as product is pumped from inside the interior of the pouch, a volume defined by the pouch decreases while cross sections of the pouch located along at least a portion of its axial height remain substantially symmetrical with respect to a mid cross sectional plane containing the free end of the dip tube.

135. The device of claim 134, wherein the device is configured so that as the product is pumped from the interior of the pouch, cross sections of the pouch located along said at least a portion of its axial height maintain a substantially symmetric shape with respect to an axis containing the dip tube.

136. The device of claim 130, wherein the pouch is configured to move from a first position, wherein the pouch defines a maximum volume, to a second position, wherein the pouch defines a minimum volume.

137. The device of claim 136, wherein said pouch, when in the second position, is close to the dip tube along at least one longitudinal region.

138. The device of claim 136, wherein said pouch, when in the second position, contacts the dip tube along at least one longitudinal position.

139. The device of claim 136, wherein an internal cross shape defined by the container is similar to a shape of the pouch when the pouch is in the first position.

140. The device of claim 132, wherein the at least one fixing region comprises a plurality of fixing regions, and

wherein the pouch and the plurality of fixing regions are configured so that a profile of a portion of the pouch extending between two adjacent fixing regions deforms substantially symmetrically with respect to a plane passing through an axis of the dip tube and a midpoint between the two adjacent fixing regions.

141. The device of claim 132, wherein the at least one fixing region extends continuously along substantially the entire height of the pouch.

142. The device of claim 136, wherein cross sections of the pouch have a symmetric shape about an axis.

143. The device of claim 142, wherein the pouch has at least four sides when the pouch is in the first position.

144. The device of claim 143, wherein the pouch is fixed to the container along N longitudinal fixing regions.

145. The device of claim 144, wherein N is greater than or equal to three.

146. The device of claim 142, wherein when the pouch is in the first position, the pouch has a square shaped cross section having four sides with a longitudinal fixing region being located at the middle of each of the four sides.

147. The device of claim 142, wherein when the pouch is in the first position, the pouch has a hexagonal shaped cross section with a longitudinal fixing region located at every other corner of said cross section.

148. The device of claim 130, wherein a cross sectional area defined by the pouch is at a maximum substantially at a mid-point of the axial height and decreases gradually away from the midpoint.

149. The device of claim 130, wherein the at least one passage comprises one or more orifices formed in a bottom of the external container.

150. The device of claim 149, wherein the orifices comprise slots.

151. The device of claim 130, wherein the device is formed by co-extrusion of a first material forming the container and a second material forming the pouch, the first material being physically and chemically incompatible with the second material.

152. The device of claim 130, wherein the pouch is fixed longitudinally to an interior of the container along at least one fixing region, and wherein the at least one fixing region comprises a third material that is physically and chemically compatible with said first material and second material.

153. The device of claim 152, wherein the third material comprises a thermoplastic.

154. The device of claim 151, wherein the first material is chosen from polyethylene terephthalates, ABSs, and styrenes.

155. The device of claim 151, wherein the second material is chosen from polypropylenes and polyethylenes.

156. The device of claim 152, wherein the third material is a resin chosen from ADMER grade SF 600, ADMER grade SE 800, ADMER grade SF 620E, LOTADER grade TX8030, and LOTADER grade HX8020.

157. The device of claim 130, wherein the pump is mounted on the device by at least one of crimping and screwing.

158. The device of claim 130, further comprising a dispensing head for actuating the pump and dispensing product via at least one dispensing orifice.

159. The device of claim 130, further comprising product contained in the interior of the pouch, wherein the product comprises a cosmetic product.

160. The device of claim 159, wherein the cosmetic product is chosen from personal hygiene products, scents, makeup products, hair products, care products, and sunscreens.

161. A device for dispensing a product, comprising:

a container;

a flexible-walled pouch inside the container, the flexible-walled pouch comprising an interior configured to contain the product;

a dip tube extending in the interior of the pouch;

an airless pump in fluid communication with the interior of the flexible-walled pouch via the dip tube; and

at least one passage configured to allow air entry into the container and outside of the pouch,

wherein said pouch is fixed longitudinally to an interior wall of the container along at least one fixing region, and

wherein the device is configured so that substantially all of the product contained in the pouch is dispensed via the airless pump regardless of whether the device is oriented in a head-up position or a head-down position.

162. The device of claim 161, wherein the passage is configured to allow the air entry as the product is pumped from the pouch.

163. The device of claim 161, wherein the device is configured so that, as product is pumped from the interior of the pouch, a volume defined by the pouch above the free end of the dip tube remains substantially equal to a volume defined by the pouch below the free end of the dip tube.

164. The device of claim 161, wherein the device is configured so that as product is pumped from inside the interior of the pouch, a volume defined by the pouch decreases while cross sections of the pouch located along at least a portion of its axial height remain substantially symmetrical with respect to a mid cross sectional plane containing the free end of the dip tube.

165. The device of claim 164, wherein the device is configured so that as the product is pumped from the interior of the pouch, cross sections of the pouch located along said at least a portion of its axial height maintain a substantially symmetric shape with respect to an axis containing the dip tube.

166. The device of claim 161, wherein the pouch is configured to move from a first position, wherein the pouch defines a maximum volume, to a second position, wherein the pouch defines a minimum volume.

167. The device of claim 166, wherein said pouch, when in the second position, is close to the dip tube along at least one longitudinal region.

168. The device of claim 166, wherein said pouch, when in the second position, contacts the dip tube along at least one longitudinal position.

169. The device of claim 166, wherein an internal cross shape defined by the container is similar to a shape of the pouch when the pouch is in the first position.

170. The device of claim 161, wherein the at least one fixing region comprises a plurality of fixing regions, and

wherein the pouch and the plurality of fixing regions are configured so that a profile of a portion of the pouch extending between two adjacent fixing regions deforms substantially symmetrically with respect to a plane passing through an axis of the dip tube and a midpoint between the two adjacent fixing regions.

171. The device of claim 161, wherein the at least one fixing region extends continuously along substantially the entire height of the pouch.

172. The device of claim 166, wherein cross sections of the pouch have a symmetric shape about an axis.

173. The device of claim 172, wherein the pouch has at least four sides when the pouch is in the first position.

174. The device of claim 173, wherein the pouch is fixed to the container along N longitudinal fixing regions.

175. The device of claim 174, wherein N is greater than or equal to three.

176. The device of claim 172, wherein when the pouch is in the first position, the pouch has a square shaped cross section having four sides with a longitudinal fixing region being located at the middle of each of the four sides.

177. The device of claim 172, wherein when the pouch is in the first position, the pouch has a hexagonal shaped cross section with a longitudinal fixing region located at every other corner of said cross section.

178. The device of claim 161, wherein a cross sectional area defined by the pouch is at a maximum substantially at a mid-point of the axial height and decreases gradually away from the midpoint.

179. The device of claim 161, wherein the at least one passage comprises one or more orifices formed in a bottom of the external container.

180. The device of claim 179, wherein the orifices comprise slots.

181. The device of claim 161, wherein the device is formed by co-extrusion of a first material forming the container and a second material forming the pouch, the first material being physically and chemically incompatible with the second material.

182. The device of claim 181, wherein the pouch is fixed longitudinally to an interior of the container along at least one fixing region, and wherein the at least one fixing region comprises a third material that is physically and chemically compatible with said first material and second material.

183. The device of claim 182, wherein the third material comprises a thermoplastic.

184. The device of claim 181, wherein the first material is chosen from polyethylene terephthalates, ABSs, and styrenes.

185. The device of claim 181, wherein the second material is chosen from polypropylenes and polyethylenes.

186. The device of claim 182, wherein the third material is a resin chosen from ADMER grade SF 600, ADMER grade SE 800, ADMER grade SF 620E, LOTADER grade TX8030, and LOTADER grade HX8020.

187. The device of claim 161, wherein the pump is mounted on the device by at least one of crimping and screwing.

188. The device of claim 161, further comprising a dispensing head for actuating the pump and dispensing product via at least one dispensing orifice.

189. The device of claim 161, further comprising product contained in the interior of the pouch, wherein the product comprises a cosmetic product.

190. The device of claim 30, wherein the cosmetic product is chosen from personal hygiene products, scents, makeup products, hair products, care products, and sunscreens.

191. The device of claim 161, wherein the pouch is formed of a substantially non-elastic material.

192. The device of claim 191, wherein the material is deformable.

193. A device for dispensing a product, comprising:

a flexible-walled pouch, the flexible-walled pouch comprising an interior;

a product contained in the interior of the pouch;

a dip tube extending in the interior of the pouch, the dip tube having a free end; and

an airless pump in fluid communication with the interior of the flexible-walled pouch via the dip tube,

wherein pressure in the interior of the pouch, at least prior to first use of the device, is less than or substantially equal to atmospheric pressure, and

wherein the device is configured so that substantially all of the product contained in the pouch is dispensed via the airless pump regardless of whether the device is oriented in a head-up position or a head-down position.

194. The device of claim 193, wherein the device is configured so that the pouch deforms substantially symmetrically with respect to a plane bisecting a cross section of the pouch as product is pumped out of the interior of the pouch.

195. The device of claim 193, wherein the device is configured so that, as product is pumped from the interior of the pouch, a volume defined by the pouch above the free end of the dip tube remains substantially equal to a volume defined by the pouch below the free end of the dip tube.

196. The device of claim 193, wherein the device is configured so that as product is pumped from inside the interior of the pouch, a volume defined by the pouch decreases while cross sections of the pouch located along at least a portion of its axial height remain substantially symmetrical with respect to a cross sectional plane containing the free end of the dip tube.

197. The device of claim 196, wherein the device is configured so that as the product is pumped from the interior of the pouch, cross sections of the pouch located along said at least a portion of its axial height maintain a substantially symmetric shape with respect to an axis containing the dip tube.

198. The device of claim 193, wherein the pouch is configured to move from a first position, wherein the pouch defines a maximum volume, to a second position, wherein the pouch defines a minimum volume.

199. The device of claim 198, wherein said pouch, when in the second position, is close to the dip tube along at least one longitudinal region.

200. The device of claim 198, wherein said pouch, when in the second position, contacts the dip tube along at least one longitudinal position.

201. The device of claim 198, wherein cross sections of the pouch have a symmetric shape about an axis.

202. The device of claim 200, wherein the pouch has at least four sides when the pouch is in the first position.

203. The device of claim 193, wherein a cross sectional area defined by the pouch is at a maximum substantially at the mid-point of the axial height and decreases gradually away from the midpoint.

204. The device of claim 193, wherein the pump is mounted on the device by at least one of crimping and screwing.

205. The device of claim 193, further comprising a dispensing head for actuating the pump and dispensing product via at least one dispensing orifice.

206. The device of claim 193, wherein the product comprises a cosmetic product.

207. The device of claim 206, wherein the cosmetic product is chosen from personal hygiene products, scents, makeup products, hair products, care products, and sunscreens.

208. The device of claim 193, wherein the pouch is formed of a substantially non-elastic material.

209. The device of claim 208, wherein the material is deformable.

210. A device for dispensing a product, comprising:

a flexible-walled pouch, the flexible-walled pouch comprising an interior configured to contain the product;

a dip tube extending in the interior of the pouch, the dip tube having a free end; and

an airless pump in fluid communication with the interior of the flexible-walled pouch via the dip tube,

wherein the flexible pouch comprises a substantially non-elastically deformable material, and

wherein the device is configured so that substantially all of the product contained in the pouch is dispensed via the airless pump regardless of whether the device is oriented in a head-up position or a head-down position.

211. The device of claim 210, wherein the device is configured so that the pouch deforms substantially symmetrically with respect to a plane bisecting a cross section of the pouch as product is pumped out of the interior of the pouch.

212. The device of claim 210, wherein the device is configured so that, as product is pumped from the interior of the pouch, a volume defined by the pouch above the free end of the dip tube remains substantially equal to a volume defined by the pouch below the free end of the dip tube.

213. The device of claim 210, wherein the device is configured so that as product is pumped from inside the interior of the pouch, a volume defined by the pouch decreases while cross sections of the pouch located along at least a portion of its axial height remain substantially symmetrical with respect to a cross sectional plane containing the free end of the dip tube.

214. The device of claim 213, wherein the device is configured so that as the product is pumped from the interior of the pouch, cross sections of the pouch located along said at least a portion of its axial height maintain a substantially symmetric shape with respect to an axis containing the dip tube.

215. The device of claim 210, wherein the pouch is configured to move from a first position, wherein the pouch defines a maximum volume, to a second position, wherein the pouch defines a minimum volume.

216. The device of claim 215, wherein said pouch, when in the second position, is close to the dip tube along at least one longitudinal region.

~~217. The device of claim 215, wherein said pouch, when in the second position,~~
contacts the dip tube along at least one longitudinal position.

218. The device of claim 215, wherein cross sections of the pouch have a symmetric shape about an axis.

219. The device of claim 218, wherein the pouch has at least four sides when the pouch is in the first position.

220. The device of claim 210, wherein a cross sectional area defined by the pouch is at a maximum substantially at a mid-point of the axial height and decreases gradually away from the midpoint.

221. The device of claim 210, wherein the pump is mounted on the device by at least one of crimping and screwing.

222. The device of claim 210, further comprising a dispensing head for actuating the pump and dispensing product via at least one dispensing orifice.

223. The device of claim 210, further comprising product contained in the interior of the pouch, wherein the product comprises a cosmetic product.

224. The device of claim 223, wherein the cosmetic product is chosen from personal hygiene products, scents, makeup products, hair products, care products, and sunscreens.

225. The device of claim 210, wherein the pouch is formed of a substantially non-elastic material.

226. The device of claim 225, wherein the material is deformable.

227. A device for dispensing a product, comprising:

a flexible-walled pouch, the flexible-walled pouch comprising an interior;

~~a product contained in the interior of the pouch;~~

a dip tube extending in the interior of the pouch, the dip tube having a free end located substantially at a mid-point of an axial height of the pouch; and

an airless pump in fluid communication with the interior of the flexible-walled pouch via the dip tube,

wherein pressure in the interior of the pouch, at least prior to first use of the device, is less than or substantially equal to atmospheric pressure.

228. The device of claim 227, wherein the device is configured so that the pouch deforms substantially symmetrically with respect to a plane bisecting a cross section of the pouch as product is pumped out of the interior of the pouch.

229. The device of claim 227, wherein the device is configured so that, as product is pumped from the interior of the pouch, a volume defined by the pouch above the free end of the dip tube remains substantially equal to a volume defined by the pouch below the free end of the dip tube.

230. The device of claim 227, wherein the device is configured so that as product is pumped from inside the interior of the pouch, a volume defined by the pouch decreases while cross sections of the pouch located along at least a portion of its axial height remain substantially symmetrical with respect to a cross sectional plane containing the free end of the dip tube.

231. The device of claim 230, wherein the device is configured so that as the product is pumped from the interior of the pouch, cross sections of the pouch located along said at least a portion of its axial height maintain a substantially symmetric shape with respect to an axis containing the dip tube.

232. The device of claim 227, wherein the pouch is configured to move from a first position, wherein the pouch defines a maximum volume, to a second position, wherein the pouch defines a minimum volume.

233. The device of claim 232, wherein said pouch, when in the second position, is close to the dip tube along at least one longitudinal region.

234. The device of claim 232, wherein said pouch, when in the second position, contacts the dip tube along at least one longitudinal position.

235. The device of claim 232, wherein cross sections of the pouch have a symmetric shape about an axis.

236. The device of claim 235, wherein the pouch has at least four sides when the pouch is in the first position.

237. The device of claim 227, wherein a cross sectional area defined by the pouch is at a maximum substantially at the mid-point of the axial height and decreases gradually away from the midpoint.

238. The device of claim 227, wherein the pump is mounted on the device by at least one of crimping and screwing.

239. The device of claim 227, further comprising a dispensing head for actuating the pump and dispensing product via at least one dispensing orifice.

240. The device of claim 227, wherein the product comprises a cosmetic product.

241. The device of claim 240, wherein the cosmetic product is chosen from personal hygiene products, scents, makeup products, hair products, care products, and sunscreens.

242. The device of claim 227, wherein the pouch is formed of a substantially non-elastic material.

~~243. The device of claim 242, wherein the material is deformable.~~

244. A device for dispensing a product, comprising:

a flexible-walled pouch, the flexible-walled pouch comprising an interior configured to contain the product;

a product contained in the interior of the pouch;

a dip tube extending in the interior of the pouch, the dip tube having a free end located substantially at a mid-point of an axial height of the pouch; and

an airless pump in fluid communication with the interior of the flexible-walled pouch via the dip tube,

wherein the flexible pouch comprises a substantially non-elastically deformable material.

245. The device of claim 244, wherein the device is configured so that the pouch deforms substantially symmetrically with respect to a plane bisecting a cross section of the pouch as product is pumped out of the interior of the pouch.

246. The device of claim 244, wherein the device is configured so that, as product is pumped from the interior of the pouch, a volume defined by the pouch above the free end of the dip tube remains substantially equal to a volume defined by the pouch below the free end of the dip tube.

247. The device of claim 244, wherein the device is configured so that as product is pumped from inside the interior of the pouch, a volume defined by the pouch decreases while cross sections of the pouch located along at least a portion of its axial height remain substantially symmetrical with respect to a cross sectional plane containing the free end of the dip tube.

248. The device of claim 247, wherein the device is configured so that as the product is pumped from the interior of the pouch, cross sections of the pouch located along said at least a portion of its axial height maintain a substantially symmetric shape with respect to an axis containing the dip tube.

249. The device of claim 244, wherein the pouch is configured to move from a first position, wherein the pouch defines a maximum volume, to a second position, wherein the pouch defines a minimum volume.

250. The device of claim 249, wherein said pouch, when in the second position, is close to the dip tube along at least one longitudinal region.

251. The device of claim 249, wherein said pouch, when in the second position, contacts the dip tube along at least one longitudinal position.

252. The device of claim 249, wherein cross sections of the pouch have a symmetric shape about an axis.

253. The device of claim 251, wherein the pouch has at least four sides when the pouch is in the first position.

254. The device of claim 244, wherein a cross sectional area defined by the pouch is at a maximum substantially at the mid-point of the axial height and decreases gradually away from the midpoint.

255. The device of claim 244, wherein the pump is mounted on the device by at least one of crimping and screwing.

256. The device of claim 244, further comprising a dispensing head for actuating the pump and dispensing product via at least one dispensing orifice.

257. The device of claim 244, wherein the product comprises a cosmetic product.

~~258. The device of claim 257, wherein the cosmetic product is chosen from~~
personal hygiene products, scents, makeup products, hair products, care products, and sunscreens.

259. The device of claim 244, wherein the pouch is formed of a substantially non-elastic material.

260. The device of claim 259, wherein the material is deformable.

261. A method for dispensing a cosmetic product, comprising:
providing the device of claim 193, wherein the product comprises a cosmetic product; and
actuating the airless pump to cause product from the pouch to be dispensed onto an exterior body portion.

262. The method of claim 261, wherein the exterior body portion comprises skin.

263. The method of claim 261, wherein the exterior body portion comprises hair.

264. The method of claim 261, wherein the cosmetic product is chosen from personal hygiene products, scents, makeup products, hair products, care products, and sunscreens.

265. The method of claim 261, further comprising changing orientation of the device from one of a head-up orientation and a head-down orientation to the other of the head-up orientation and the head-down orientation and maintaining the free end of the dip

tube in contact with product contained in the pouch both before and after the changing of the orientation.

266. The method of claim 265, wherein the maintaining occurs until substantially all of the product in the pouch is dispensed.

267. The method of claim 261, wherein the device further comprises a container inside of which the pouch is located.

268. The method of claim 267, wherein the pouch is fixed longitudinally to an interior of the container along at least one fixing region.

269. A method for dispensing a cosmetic product, comprising:
providing the device of claim 227, wherein the product comprises a cosmetic product; and
actuating the airless pump to cause product from the pouch to be dispensed onto an exterior body portion.

270. The method of claim 269, wherein the exterior body portion comprises skin.

271. The method of claim 269, wherein the exterior body portion comprises hair.

272. The method of claim 269, wherein the cosmetic product is chosen from personal hygiene products, scents, makeup products, hair products, care products, and sunscreens.

273. The method of claim 269, further comprising changing orientation of the device from one of a head-up orientation and a head-down orientation to the other of the head-up orientation and the head-down orientation and maintaining the free end of the dip tube in contact with product contained in the pouch both before and after the changing of the orientation.

274. The method of claim 273, wherein the maintaining occurs until substantially all of the product in the pouch is dispensed.

275. The method of claim 269, wherein the device further comprises a container inside of which the pouch is located.

276. The method of claim 275, wherein the pouch is fixed longitudinally to an interior of the container along at least one fixing region.

277. A method for dispensing a cosmetic product, comprising:
providing the device of claim 210, wherein the product comprises a cosmetic product; and

actuating the airless pump to cause product from the pouch to be dispensed onto an exterior body portion.

278. The method of claim 277, wherein the exterior body portion comprises skin.

279. The method of claim 277, wherein the exterior body portion comprises hair.

280. The method of claim 277, further comprising product contained in the pouch, wherein the cosmetic product is chosen from personal hygiene products, scents, makeup products, hair products, care products, and sunscreens.

281. The method of claim 277, further comprising changing orientation of the device from one of a head-up orientation and a head-down orientation to the other of the head-up orientation and the head-down orientation and maintaining the free end of the dip tube in contact with product contained in the pouch both before and after the changing of the orientation.

282. The method of claim 281, wherein the maintaining occurs until substantially all of the product in the pouch is dispensed.

283. The method of claim 277, wherein the device further comprises a container inside of which the pouch is located.

284. The method of claim 283, wherein the pouch is fixed longitudinally to an interior of the container along at least one fixing region.

285. A method for dispensing a cosmetic product, comprising:
~~providing the device of claim 244, wherein the product comprises a cosmetic~~
product; and
actuating the airless pump to cause product from the pouch to be dispensed onto an exterior body portion.

286. The method of claim 285, wherein the exterior body portion comprises skin.

287. The method of claim 285, wherein the exterior body portion comprises hair.

288. The method of claim 285, further comprising product contained in the pouch, wherein the cosmetic product is chosen from personal hygiene products, scents, makeup products, hair products, care products, and sunscreens.

289. The method of claim 285, further comprising changing orientation of the device from one of a head-up orientation and a head-down orientation to the other of the head-up orientation and the head-down orientation and maintaining the free end of the dip tube in contact with product contained in the pouch both before and after the changing of the orientation.

290. The method of claim 289, wherein the maintaining occurs until substantially all of the product in the pouch is dispensed.

291. The method of claim 285, wherein the device further comprises a container inside of which the pouch is located.

292. The method of claim 291, wherein the pouch is fixed longitudinally to an interior of the container along at least one fixing region.
